REMARKS

Applicants and the undersigned are most grateful for the time and effort accorded the instant application by the Examiner.

On February 26, 2007, Applicants' counsel conducted a telephone interview with the Examiner in which the present application, the Ting reference, and the Miller et al. reference were discussed. No agreement, however, was reached with respect to the claims of the present application. It was agreed, however, the next Office Action would be a non-final action as the Examiner would be making a Section 101 rejection.

The Office is respectfully requested to reconsider the objections and rejections present in the outstanding Office Action in light of the following remarks.

Claims 1-25 were pending in the instant application at the time of the outstanding Office Action. Of these claims, Claims 1, 13 and 25 are independent claims; the remaining claims are dependent claims. Applicants acknowledge that Claims 5-6 and 17-18 were indicated by the Examiner as being allowable if rewritten in independent form. Applicants reserve the right to file new claims of such scope at a later date that would still, at that point, presumably be allowable.

Claims 1, 13, and 25 have been rewritten. It should be noted, however, that these amendments are not in acquiescence of the Office's position on allowability of the claims, but merely to expedite prosecution, and that Applicants specifically state that no

amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Section 101 Amendments

Based upon the discussion with the Examiner regarding a forthcoming Section 101 rejection, Applicants have amended the independent claims to further emphasis they are directed to statutory subject matter. Claims 1 and 13 now recite "wherein the adapted statistical model is stored in a computer memory". Claim 25 now recites "wherein the adapted statistical model is stored in memory readable by the machine". Support for these amendments appears throughout the specification, including the discussion on page 18 regarding implementation of the present invention. The independent claims as amended are clearly directed to statutory subject matter.

The above Remarks notwithstanding, the Applicants recognize and understand the focus of the Patent Office on ensuring that claims meet the statutory requirements of Section 101. To that end, should the Examiner deem that a rejection under 35 U.S.C. § 101 would still be made; Applicants and their undersigned representative kindly request the courtesy of a Telephone Interview so that an agreement may be reached as to how the claims might be amended in order to satisfy Section 101 before the issuance of the next Office Action.

Claims 1-2, 7-14, and 19-25 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ting. Claims 3 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ting view of Miller et al. (hereinafter "Miller"). Claims 4 and 16 stand

rejected under 35 U.S.C. § 103(a) as being unpatentable over ting in view of Miller and in further view of Kita et al. ("hereinafter "Kita"). In light of the following remarks, reconsideration and withdrawal of the present rejections is hereby respectfully requested. It should also be noted, the comments made regarding the present invention in Applicants' previous Amendments remain equally applicable and are, therefore, incorporated by reference as if fully set forth herein.

Section 102(b) Rejections

As indicated in Applicants' disclosure, when test data for a parser is different in nature than the data on which the parser was trained, the performance of a parser will become worse than that of a matched condition. The present invention thus broadly contemplates adapting statistical parsers to new data. In particular, it is assumed that an initial statistical parser is available and a batch of new data is given. In unsupervised adaptation, however, true parses of the new data are not available. The initial model preferably includes a finite collection of probability mass functions (pmf's). The pmf's are preferably transformed into a new model via Markov matrices. These Markov matrices are preferably obtained by maximizing the likelihood of test data with respect to the decoded parses using the initial model. In broad terms, the present invention relates to the adapting of an existing statistical parser into one that fits better new or unseen text data. The adaptation scheme may also be carried out iteratively. (See Page 3, line 15 - Page 4, line 7) Further, the instant invention enables both supervised and unsupervised adaptation, in which the inputs the instant invention differ. (See Page 6, lines 7-15) Thus, the claim limitations specifically require, *inter alia*, "**adapting the statistical**

[parsing] model via employing a mathematical transform". (Claim 1, emphasis added) Similar language appears in the other independent claims.

As best understood, in contrast to the present invention, the invention of Ting does NOT use any mathematical transform. The Office cites Ting (Col. 8 lines 22-38), which states in pertinent part "Using these parameters, in fact one obtains a better way to model the statistical profile of an unknown word ..." The word "adapting", however, does not appear in the cited text and Ting merely argues that using the corpus statistics of part-of-speech is much better than random guess. The crucial difference here is that there is no mathematical connection between the random guess and statistics extracted from the corpus in Ting patent, while in the present invention, a transform maps an existing set of parameters to a new one.

By way of example, Ting suggested that a human annotate a corpus consisting of, say, 10000 words with each word marked with its part-of-speech. Then the occurrence of each part-of-speech is counted. For the sake of simplicity, let us say there are only 3 types of part-of-speeches: NOUN, VERB and PREPOSITION, and assume that NOUN is seen 4,000 times, VERB 3,500 times, and PREPOSITION 2,500. So probability of NOUN is 0.4, VERB is 0.35 and PREPOSITION is 0.25. At the time when the parser is applied to test material and when seeing a word that has never been seen before (a.k.a. unknown word), Ting suggests to pick "NOUN" as the part-of-speech of the unknown word. Without the corpus, one would have to pick randomly a part-of-speech since one has to assume that part-of-speech has a uniform distribution – in the toy example, this means NOUN, VERB and PREPOSITION each has 1/3 of probability being chosen.

This contrasts with the with present invention in at least two ways:

(1) There is no mathematical connection between the uniform distribution and the one extracted from the corpus statistics. On the other hand, the present invention would transform the distribution extracted from corpus into a new one at the time when the parser is applied, which has no similarity whatsoever to the teachings of Ting.

(2) In Ting, once extracted, the corpus statistics are fixed throughout the application time; while in the present invention model parameters change at application time – which is the essence of "adaptation".

Additionally, the Applicant would like to make several other points regarding the present rejections. With regard to Claims 2 and 14, the Office cites Ting (Col. 6, lines 54-62), which states "The remaining candidate governors are then statistically processed in step S4 by means of the hidden Markov model 17 having the **predetermined statistical parameters** for the English language in order to identify ..." (emphasis added). There is no mention that the hidden Markov model parameters are adapted or updated. On the contrary, it is clearly stated "the hidden Markov model 17 having the *predetermined* statistical parameters," which implies that the parameters are NOT updated or adapted when the model is applied in contrast to the present invention. To the extent there is any confusion caused by the seemingly lexical similarity with the phrase "Markov transform" used in the claims, that may be dispelled by considering the terminology used is the claims as a stochastic transform. Thus, the rejection of these claims is also respectfully requested to be reconsidered and withdrawn.

With regards to Claims 7 and 19, the Office cites Ting (Col. 8, lines 22-28), however, there is no mention of "adapting the statistical parameters ...," let alone unsupervised adaptation. The citation "Using these parameters, in fact one obtains a better way to model the statistical profile of an unknown word ..." refers to an improvement on random guess. In fact, the improvement needs supervision information, i.e., words in the corpus need to be marked by human before statistics can be computed, which contrasts sharply with the unsupervised technique of the present invention. These rejections should now be withdrawn.

With regards to Claims 8 and 20, the Office cites Ting (Col. 6, lines 44-62), but there is no mention of "employing decoded parses of test material" for adapting/updating the parser. This contrast with the present invention in which decoded parses of test material are used to update/adapt the parser. These rejections should also now be withdrawn.

With regards to Claims 19 and 21, the Office cites Ting (Col. 4, lines 47-50), which mentions "the parsing machine 1 is calibrated for a particular language by manually tagging a small corpus." The difference between Ting and the present invention is that Ting's "calibration" is done when the parser is built; once it is calibrated, Ting's parsing machine is fixed. In the present invention, the parser is changed at the time when it is applied. So our supervised adaptation happens at the parser's application time, while Ting's calibration happens when the parser is built. Claims 19 and 21 have been rewritten to clarify this difference. These rejections should now be withdrawn.

With regards to Claims 10 and 22, the comments previously made with respect to Claims 8 and 20 are equally applicable and these rejections should be withdrawn.

With regards to Claims 11, 23, 12, and 24, these claims depend upon Claims 2 and 14. For the reasons discussed above with respect to the parent claims, the rejections against these claims should also be reconsidered and withdrawn.

It is thus respectfully submitted that Ting falls short of the present invention. Applicants further respectfully submit that the applied art does not anticipate the present invention because, at the very least, "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under construction." W.L. Gore & Associates, Inc. v. Garlock, 721 F.2d 1540, 1554 (Fed. Cir. 1983); see also In re Marshall, 198 U.S.P.Q. 344, 346 (C.C.P.A. 1978).

Section 103(a) Rejections

The Office also rejected certain Claims 3, 15, 4, and 16 under 35 U.S.C. § 103(a) over Ting in combination with various references, asserting "it would have been obvious ... to combine the parsing system of Ting with the probability mass functions of Miller et al." and "it would have been obvious ... to combine the methods of Ting with the methods of Miller et al. with probability function usage of Kita et al." Applicants respectfully traverse these rejections.

Ting in combination with Miller does not overcome the deficiencies of Ting as discussed above. Neither Ting, Miller, nor Kita suggest "adapting the statistic parsing

model via employing a mathematical transform". (Claim 1, and other independent claims)

With respect to Claims 3 and 15, the Office cites Miller (Page 56) for the statement "the probability mass for each discourse-dependent meaning is focused on a single parse tree". This statement, however, does refer to adaptation at all. Furthermore, the comments made above with respect to Claims 2 and 14 are also applicable here. As such, the combination of Ting and Miller does not result in the present invention, nor is there any motivation to combine the reference or an expectation of success. Applicants respectfully submit this rejection should be withdrawn.

With respect to Claims 4 and 16, these claims depend from Claims 3 and 15 are allowable for the reasons set forth above with respect to Claims 3 and 15. This rejection should therefore also be withdrawn.

A 35 U.S.C. § 103(a) rejection requires that the combined cited references teach all of the limitations of the claimed invention and provide both the motivation to combine the references and an expectation of success. As shown above, the combination of the two references fails to teach all of the limitations of the claimed invention. Moreover, it is respectfully submitted that there is absolutely no motivation to combine Ting and Miller. Therefore, it is respectfully submitted that the rejections based upon the combination of Ting and Miller are not valid rejections. Reconsideration and withdrawal is respectfully requested.

Conclusion

By virtue of dependence from what are believed to be allowable independent Claims 1 and 13, it is respectfully submitted that Claims 2-3, 5-12 and 13-15 and 17-24 are also presently allowable. Applicants acknowledge that Claims 5, 6, 17 and 18 were indicated by the Examiner as being allowable if rewritten in independent form. Applicants reserve the right to file new claims of such scope at a later date that would still, at that point, presumably be allowable.

The "prior art made of record" has been reviewed. Applicants acknowledge that such prior art was not deemed by the Office to be sufficiently relevant as to have been applied against the claims of the instant application. To the extent that the Office may apply such prior art against the claims in the future, Applicants will be fully prepared to respond thereto.

/

/

/

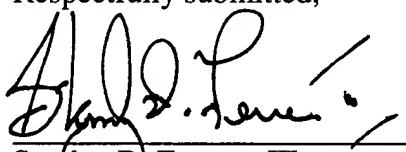
/

/

/

In summary, it is respectfully submitted that the instant application, including Claims 1-3, 5-15, and 17-25, is presently in condition for allowance. Notice to the effect is earnestly solicited. If there are any further issues in this application, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,



Stanley D. Ference III
Registration No. 33,879

Customer No. 35195
FERENCE & ASSOCIATES
409 Broad Street
Pittsburgh, Pennsylvania 15143
(412) 741-8400
(412) 741-9292 - Facsimile

Attorneys for Applicants